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A DISJUNCT NEW TRIBE, GENUS, AND SPECIES OF CHELODESMID MILLIPEDS FROM PARAGUAY (POLYDESMIDA: CHELODESMIDAE)

by Richard L. Hoffman

ABSTRACT

The name *Gonorygma kochalkai* is proposed and defined for an unusual chelodesmid endemic to the Chaco region of Paraguay. Belonging in the group of supposedly primitive genera that contains *Leiodesmus*, *Telonychopus*, and others of the Parana River basin, *Gonorygma* is remarkable for a long, deep, fossa separating the gonopod prefemur from base of the acropodite. This feature is so singular within the Chelodesmidae as to justify the establishment of a monobasic new tribe **Gonorygmatini**.

The Parana River drainage basin of southwestern Brasil, northern Argentina, Paraguay, and Bolivia is inhabited by a assemblage of large chelodesmids which in many respects appear to be primitive (generalized) in terms of their structure as opposed to clearly derivative taxa of southeastern Brasil and the northern Andean region. A synopsis of this group has been developing for several decades, but the necessary leisure for its completion has not been available, and the following account of one constituent is presented in advance in order to make the name available for an inventory of Paraguayan arthropods being conducted by Mr. John A. Kochalka of the Inventorio Biologico Nacional (INBP) of that country.

Mr. Kochalka is thanked for the opportunity of examining some of the diplopod material he has obtained, and for permission to retain the holotype for the Virginia Museum of Natural History.

Family Chelodesmidae Cook, 1985

Gonorygmatini, new tribe

With the characters of the single included genus.

Gonorygma, new genus

Type species: *Gonorygma kochalkai,* new species.

Name: A neologism composed of the Greek elements *gono-* (from gonopod) + *orygmos,* a ditch, moat, or trench, in allusion to the singular femoral cavity of the gonopod.

Diagnosis: A genus of large chelodesmids in the group containing also *Leiodesmus, Cyclorhabdoides, Euthydesmus, Telonychopus,* and others undescribed, having in common large body size, convex dorsum, small, separated paranota, spinulose limbus, paired processes on anterior male sterna, prominent median sternal remnant, lack of a distinct solenomere, &c. Within this group, *Gonorygma* is distinguished by the basally cingulate prefemoral process and deep fossa between prefemur and acropodite of the gonopod.

Distribution: Known so far only from the type locality of the type species.

Remarks: The tribal name Telonychopodini (Verhoeff, 1941) has been based upon one of the genera thought to be related to *Gonorygma,* but is not utilized in the present context since the group as presently conceived is united chiefly by plesiomorphic character states. Further investigation of the relevant taxa will doubtless provide apomorphies better suited for the definition of both genera and tribes in this section of the Chelodesmidae. At present, it appears that of known genera, only *Telonychopus, Manfrediodesmus,* and *Odontopeltis* are referable to the Telonychopodini.

Two features of gonopod structure in *Gonorygma* merit particular attention. One is the presence of distinct paramedian costulae on the posterior margin of the sternal aperture (Fig. 5), which occur sporadically among what I consider to be "primitive" genera of Chelodesmidae. However, it would appear to be some type of derived character, being present in *Macrocoxodesmus* (Hoffman, 1990, fig.2) but not in its close related *Brachyurodesmus.* Possibly there is a functional correlation associated with large gonopods. The second structural feature of *Gonorygma* is the retention between prefemoral and acropodital regions of the gonopod of what can only be an articular remnant (Fig. 7, arrow), not seen by me in any other chelodesmid genus. It is of course a consequence of the deep femoral fossa.

A non-sexual character likewise widespread among the genera related to *Telonychopus* and *Leiodesmus* is the occurrence of a limbus modified by the presence of acicular projections which arise *anterior to* the distal edge, and for which reason cannot be termed "fimbriate." This type of limbus may prove to be plesiomorphic within the family, along with unmodified male legs, large median gonosternal remnant, and absence of a solenomere.

Gonorygma kochalkai, n. sp.

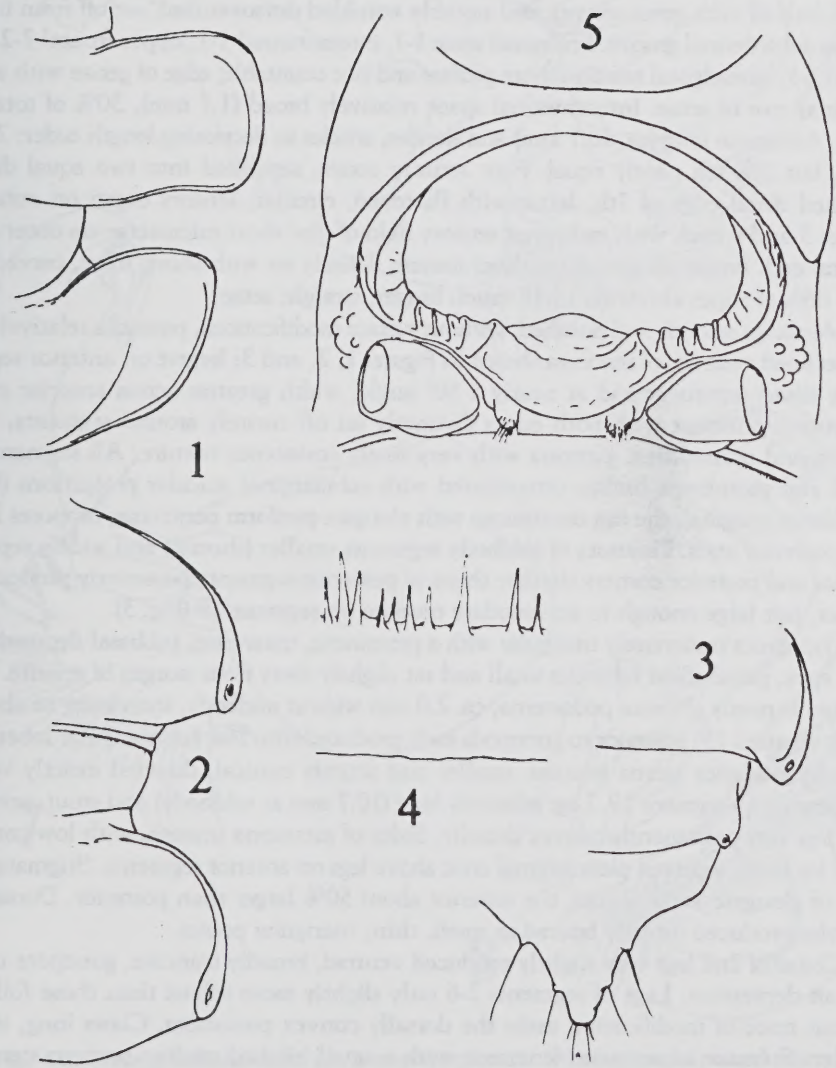
Figures 1-6

Name: Patronym for the collector, in recognition of his admirable work to inventory the biota of Paraguay.

Material: Male holotype (VMNH) and male topoparatype (INBP) from Madrejon, Parc Nacional "Defensores del Chaco", Dpto. Chaco, Paraguay, John A. Kochalka leg. 5-17 December 1981.

Holotype: Adult male, at present fragmented with many legs broken off, length approximately 82 mm, body widest (across paranota) at anterior third, thereafter tapering gradually posteriad as reflected in the widths of selected body segments:

Segment	1 - 10.0 mm	Segment	10 - 11.0 mm
	2 - 10.9		12 - 10.8
	4 - 11.4		14 - 10.2
	6 - 11.6		16 - 9.8
	8 - 11.0		18 - 7.1



Figs. 1-5. *Gonorygma kochalkai*, n. sp., peripheral structures. 1. Right paranota of segments 3 and 4, the latter slightly deflected caudoventral therefore a little foreshortened but its lesser width is correctly shown. 2. Right paranota of segments 9 and 10, showing the substantial separation characteristic of this species. 3. Epiproct and right paranota of segments 18 and 19 showing extreme reduction of the latter. 4. Section of limbus from midbody segment, greatly enlarged. 5. Sternal aperture of 7th segment, showing paracoxal setose knobs and paramedian costulation of posterior apertural inner margin.

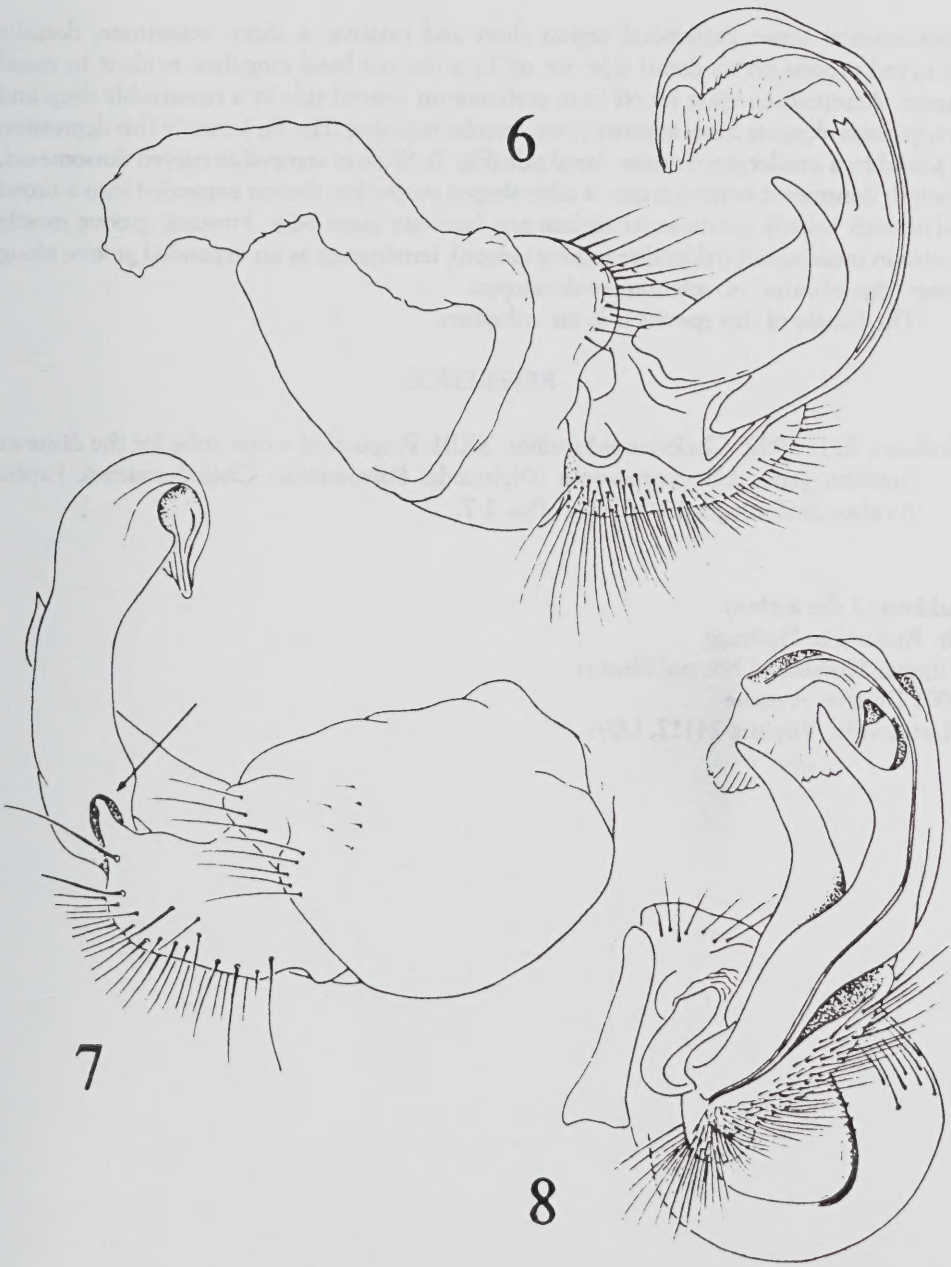
Body overall relatively slender for a chelodesmid, with minimal telescoping of segments and a correspondingly wide spacing between paranota. L/W ratio ca. 13.4% at midbody, slightly greater at segment 6. Color shortly after preservation a rich brownish maroon or castaneus, with caudolateral half of each paranotum and a broad (up to 2/3rds of metatergal length) transverse metatergal band lemon yellow. Antennae and legs concolorous with body, except basalmost podomeres a little lighter in shade.

Head smooth and polished, 5.7 mm across genal apices, epicranial suture prominent, dorsal half of each gena convex and notably wrinkled dorsoventrad, set off from frons by shallow subantennal groove. Epicranial setae 1-1, interantennal 1-1, upper frontal 2-2, lower frontal 3-3, labroclypeal setation more profuse and not countable; edge of genae with a single marginal row of setae. Interantennal space relatively broad (1.7 mm), 30% of total head width. Antennae long (ca. 10.1 mm) and slender, articles in decreasing length order: 2-6-3-5-4-1-7, but 3th-5th nearly equal. Four sensory cones, separated into two equal diads by inturned distal edge of 7th, latter with flattened, circular, sensory organ on outer side, articles 5 and 6 each with indistinct sensory field of fine short microsetae on outer surface of distal end. Entire surface of gnathochilarium densely set with short, stout, curved setae; distal fifth of stipes also with 16-18 much longer, straight setae.

Metaterga smooth and polished, without surface modifications, paranota relatively small and declined ventrad, of the form shown in Figures 1, 2, and 3; largest on anterior segments where tilted anteroventrad at nearly a 50° angle, width greatest across anterior corners. Stricture prominent with both edges distinctly set off entirely around segments, surface smooth and unmodified, prozona with very finely coriaceous texture. All segments with broad and prominent limbus ornamented with submarginal acicular projections (Fig. 4). Scapulorae marginal, the rim continuous with elongate-pyriform peritreme, ozopores located near posterior ends. Paranota of midbody segments smaller (shorter) and widely separated, anterior and posterior corners similar; those of posterior segments posteriorly produced and smaller, just large enough to accomodate ozopore on segment 19 (Fig. 3).

Hypoproct transversely triangular with a prominent, transverse, subbasal depression and acute apex, paramedian tubercles small and set slightly away from margin of sclerite. Sterna elevated as nearly glabrous podosterna, ca. 2.0 mm wide at midbody, increasing to about 2.3 mm at segment 15, posterior to gonopods each produced into low subtriangular lobes which on more posterior sterna become smaller and acutely conical, directed exactly ventrad, disappearing by segment 19. Legs relatively long (10.7 mm at midbody) and stout, prefemora of all legs very prominently convex dorsally. Sides of metazona smooth, with low convexity about leg bases, a curved pleurosternal crest above legs on anterior segments. Stigmata in the form of elongate vertical slits, the anterior about 50% larger than posterior. Dorsal coxal condyles produced directly laterad as small, thin, triangular points.

Coxae of 2nd legs very slightly produced ventrad, broadly truncate, gonopore in small median depression. Legs of segments 2-6 only slightly more robust than those following, without trace of modification aside the dorsally convex prefemora. Claws long, straight, slender. Sternum of segment 4 narrow, with a small bilobed median process; sternum of segment 5 with two pairs of hemispherical lobes, those of posterior pair deeply separated median cleft; sternum of segment 6 anteriorly narrow with two conical processes, thereafter becoming much broader and deeply excavated for accommodation of gonopods. Gonopod aperture very large, transverse, rim flush with surface anteriorly, strongly elevated laterally and even more so posteriorly where forming projecting median lobe extending back between 8th legs; anterior (interior) surface of this region set with four or five distinct, vertical, ribs on each side (Fig. 5).



Figs. 6-8. *Gonorygma kochalkai,* n. sp., gonopod structure. 6. Left gonopod, mesal aspect. 7. The same gonopod, lateral aspect, femoral articular remnant indicated by arrow, the gonopod is flexible at this point. 8. The same gonopod, subventral aspect showing size and shape of median sternal sclerite, deep fossa between prefemoral and acropodital regions, and terminal open fold into which prostatic groove debouches.

Gonopods (Figs. 6-8) large, massive, with elongate-triangular median sternal element present; coxae subglobose, as large as telopodites, with prominent sternal apodeme; no apophysis on dorsal side; cannula set in shallow notch of distal edge; laterally coxae produced beyond and concealing lateral side and condyle of prefemora (Fig. 7). No

paracannular setae. Prefemoral region short and massive, a short, acuminate, dorsally recurved process on its dorsal side, set off by a distinct basal cingulum evident in mesal aspect. Acropodite region set off from prefemur on ventral side by a remarkably deep and conspicuous elongate fossa, apparently an articular remnant (Fig. 8); laterally this depression is joined by a smaller groove from dorsal side (Fig. 7). Shaft of acropodite curved dorsomesad, abruptly constricted beyond origin of saber-shaped projection thence expanded into a broad calyx with heavily striate inner surface and laciniate outer edge. Prostatic groove mostly visible in mesal aspect (telopodite lacking torsion), terminating as an expanded groove along inner edge of calyx, no solenomere developed.

The female of this species is so far unknown.

REFERENCE

Hoffman, R. L. 1990. Chelodesmid studies. XXIII. Proposal of a new tribe for the disjunct Brasilian genus *Macrocoxodesmus* (Diplopoda: Polydesmida: Chelodesmidae). Papéis Avulsos de Zoologia 37: 167-172, figs. 1-7.

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